

With the Author's Compliments

ON THE
TREATMENT OF CANCER

BY
Congelation and an Improved Mode of Pressure,
SEPARATELY OR COMBINED.

WITH AN APPENDIX

ON
THE USE OF CONGELATION IN INFLAMMATORY AFFECTIONS
OF THE UTERUS.

SECOND EDITION.

BY JAMES ARNOTT, M.D.,

LATE SUPERINTENDENT OF THE MEDICAL ESTABLISHMENT AT ST HELENA.

LONDON:
JOHN CHURCHILL, NEW BURLINGTON STREET.
1855.

Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

<https://archive.org/details/b3056220x>

INTRODUCTION.

THE present ordinary practice in Cancer, when the very questionable and, generally speaking, very improper measure of removal by the knife is not resorted to, is merely to relieve the pain accompanying its fatal course as far as the preparations of opium and soothing applications will accomplish this, while alterative medicines are given more with a view of supporting the hopes of the patient, than from any idea entertained by the practitioner that they will prove of benefit. It is a very general conviction that the disease cannot be cured, and any proposal for this that may be offered is regarded with suspicion and dislike. But such a conviction is irrational. If cancer be absolutely incurable, its being so must be deemed an exception to a general law of nature; for in all diseases there is a natural tendency to cure, which is often promoted by the judicious interference of art. We must not conclude that a thing is impossible [because there is much difficulty in effecting it, and because all attempts at its accomplishment have hitherto failed. It was, doubtless, long considered impossible to find a remedy for ague, and a preventive of small pox; and for another widely-spread malady, a specific was at last, and against all expectation, discovered in a substance

which had been called by Pliny the "*venenum omnium rerum*." Nor must we despair, that in the course of time a remedy will be found for consumption and cholera—a remedy, at least, in the sense in which we speak of our remedies for typhoid and eruptive fevers, or a means of preventing or checking dangerous concomitants (such as, in respect to these diseases, inflammation of important organs, or exhausting discharges) that would otherwise interrupt the natural process of cure.

The scepticism that prevails respecting a cure for cancer has proceeded, in great part, from the frequent disappointment caused by the utter failure of many highly-praised remedies. But the blame in most of such instances should not be laid altogether on the proposers of these: it ought to be shared by those who adopted remedies that could not reasonably be expected to fulfil what was promised. Their obvious qualities bore no proportion to their therapeutical pretensions. To say nothing of such a manifest absurdity as the internal and external use of carrots, or repeated leechings, or distilled water, or a system of starvation, being proposed as a cure of cancer; what could be reasonably expected of many other remedies of more modern use? It is not enough that the proposer of a remedy should assure us that it has been successful in his hands, for he may himself be deceived, but it is requisite that the remedy shall appear fitted to fulfil the rational indications of cure proceeding from a knowledge of the nature of the malady. It ought to have *a priori* evidence in its recommendation, as well as the evidence of its proposer's experience; and it cannot be expected, especially in the present advanced state of our pathological knowledge, that any remedy will be generally adopted that has not both of these circumstances in its favour.

The two powerful remedies, forming the principal subject of the following pages, are especially adapted to the nature of the disease in which they are employed. Cancer consists essentially

of a congeries of minute cells or vesicles, each of which has an independent vitality. In order that the cells may maintain their life, and that they may increase in number, the presence of certain conditions is necessary,—particularly, that they shall be supplied with nourishment, have sufficient room or space, and a suitable temperature. These parasitic cells cannot be completely removed by the knife, or destroyed by caustic, because they penetrate far into the textures adjoining the tumour; and they cannot be destroyed by the poison of arsenic or hemlock, because a dose sufficient for this, as it must previously circulate in the blood of the patient, would prove fatal to his constitution. But by adequate pressure, applied in such a manner and with such concomitants, as to be borne by the patient, these living bodies, whether called cells or animalcules, are injured, and probably deprived of the liquid nutriment on which their existence and propagation depends; and by congelation, or a very low temperature incompatible with animal or vegetable life, they are destroyed, while the part in which they are lodged, not being like them a complete organism, but being dependent for its vitality on organs (the heart and nervous centres) unaffected by the cold, escapes all injury.

Either of these means would probably be adequate for the intended purpose, provided it could be efficiently applied, but this can be more promptly and certainly attained by their combination, when the locality of the disease and other circumstances admit of it. Congelation has, in consequence of its power of subduing inflammation and pain, other advantages in cancer, which it is unnecessary now to advert to.

The objection that, although the *local* disease may thus be kept under, or totally suppressed, the constitutional affection cannot be affected by any merely local measure, is a grave one, which will be considered in the course of this essay. It is enough, at present, to state, that the existence of any such constitutional affection is not universally admitted; and that,

granting its presence, as it is from the local disorganization that the patient suffers and dies, at least in the vast majority of instances, if this could be remedied, his sufferings and death would be prevented.

So far, then, does the treatment proposed accord with our knowledge of the nature of the disease: but is the other circumstance in its favour? does experience (which, though often misinterpreted, is, after all, the test of the utility of medical practice) speak favourably of it?

Pressure has hitherto been very imperfectly applied; yet, by those who have employed the imperfect means in the best way they could be employed, much good has been effected. We shall afterwards see that the experience of Recamier in France, and of others in this country, affords very satisfactory evidence in its favour.

The only published experience of congelation has proceeded from myself, and although that has been highly favourable so far as it extends, the remedy is of much too recent origin to admit of its being said, that cancer has been absolutely cured by it. This disease, it is well known, may continue latent for a period of many years; therefore all that may as yet be affirmed with confidence is, that cancer in any accessible situation, and in all but its last stages, can be suppressed, or its progress arrested by congelation; and that, with this arrest, all the suffering that usually accompanies the disease can be removed. Even in the last stages, much more relief can be obtained from the powerful anodyne and antiphlogistic properties of this therapeutic agent, than from any other means. Nor will I hesitate to say, that whenever congelation fails in doing much good, in whatever stage of the disease it may be employed, it is almost always in consequence of some defect in the manner of employing it. The peculiar situation of the cancer will, doubtless, prevent its being properly applied on some occasions, but much more frequently the failure proceeds from

ignorance of the proper mode of using the remedy, or a want of care or ingenuity in adapting its application to the peculiar circumstances of the case. The different effects produced by different modes of using congelation afford a striking illustration of the adage "that there is a great difference between doing a thing, and doing it properly."

The prejudice that at first existed against congelation, that the remedy itself might prove injurious in destroying the vitality of the part, has now been removed by several years' experience of its innocuousness when used in other cases of disease, and as a substitute for chloroform, in surgical operations. By rendering the majority of these painless, without endangering the patient's life, while it prevents inflammation from the wound, it has supplied a desideratum in surgery hardly inferior in importance to a cure for cancer.*

* When I state this, I must at the same time admit, that although the leading surgeon of continental Europe, Velpeau, and several eminent hospital surgeons of this country and Ireland, have adopted congelation in preference to chloroform in many operations, and have published an account of their success, the practice is as yet far from being universal. To expect that so great a change would soon become so, would betray great ignorance of the history of medical improvements; and of what may be called the law of human nature in respect to them. The speedy introduction of chloroform has indeed been triumphantly adduced, as a proof that every important medical innovation has not been at first opposed; but it must be recollected that this innovation was not what can properly be called an *improvement* of any former practice, like the ligature of arteries, the cool regimen in fevers, bark in ague, &c.; it had nothing to displace, and no acknowledgment had to be made, that an inferior practice had been too long adhered to. There was consequently no occasion, as in the case of vaccination, for the interference of the legislature to compel its substitution for more dangerous measures.

While adverting to the means of preventing pain in surgical operations, I cannot help regretting that, so familiar have we become with

Although the chief purpose of this publication is to explain the improved and novel remedies of pressure and congelation, it is necessary, for the full exposition of the subject, to advert to other modes of treatment which still find favour with some practitioners; and this will be done in separate sections, after a few remarks on the pathology or nature of cancer. To enter minutely into a consideration of the symptoms and progress of this disease, as it appears in its various localities, is not my object, and would indeed be unnecessary when reference can be so easily made to any one of the excellent and complete treatises which have lately been published on the subject, by Bennett, Lebert, Paget, Velpeau, and Walshe.

The tract will conclude with some remarks on the use of congelation in certain affections of the neck of the uterus; and to save repetition, a few pages already printed, relating to the preparation of frigorific mixtures, will also be appended to it.

16 Upper Gloucester place, Dorset square,
February 1st, 1854.

the event, even the deaths which are produced by chloroform in hospitals, now attract little or no attention. One, for example, [that occurred at a provincial hospital during last summer was only published on the 13th January, and, by accident, as it were, in a paper sent to a medical journal, relating to other matters. The operation was the excision of a small cyst under the eyebrow, and might have been made perfectly painless by congelation. As we cannot expect to become acquainted with such occurrences in private practice, it is more necessary that those happening in hospitals should be carefully reported. The question of the propriety of using chloroform in any operation rests on the question of the amount of danger attending it, and it can never be properly settled without a more accurate knowledge of the facts on which our reasoning must be founded.

ON

THE TREATMENT OF CANCER.

§ 1. *On the Nature of Cancer.*

WHEN the interior of a cancerous tumour is examined by a microscope, it is found to consist, in great part, of a congeries of exceedingly minute circular or oval cells, containing within their membranous walls round bodies, or nuclei, from which it is supposed that other cells originate. Microscopic cells are discovered in the healthy structures of the body, as well as in other morbid growths, but those contained in cancer have a peculiarity of form, sufficient, in the opinion of many observers, to distinguish this from all other tumours. It cannot be doubted that these cells possess a vitality as independent of the textures in which they are lodged as that of hydatids, worms, or other parasitic animalcules. Their only dependence is on the liquid or juice in contact with them, and from which they derive their nourishment.

The recent discovery of these cells in cancer may be said to accord with an opinion formerly entertained (and by the illustrious Jenner amongst others) that cancer consisted of, or originated from, an assemblage of hydatids, or cysts. There has been much dispute about the name which ought to be given to these vesicular bodies; but if it be acknowledged

that they possess an independent vitality (which is disputed by no one) this is a matter of very little importance. The recent diligent use of the microscope in pathology has led to the discovery of various morbid parasites which had never been suspected to exist; and the opinion is entertained by some that those mysterious diseases, the influenza and cholera, originate from the entrance into the system of minute substances endowed with animal or vegetable life.*

How the cancer cell, or nucleus, originates, is a problem which may never be satisfactorily solved. It is generally supposed that they are formed from a juice, secreted or exuded from small blood-vessels permeating the seat of the disease; and if it be so, the blood may either contain this peculiar matter, as it circulates through the body, depositing it in the locality which becomes the seat of cancer; or there may be a morbid peculiarity in the local part capable of changing the ordinary secretions from the blood into the germs of cancer; or a combination of both conditions may be necessary. Admitting that the blood contains a morbid cancerous element, this, it may be reasonably supposed, would be thrown off by the kidneys, or other excretory organs, but for some local peculiarity in the textures of the body which causes these to act as an excretory organ, and attract the poisonous element to them. This view of the subject is supported by the fact that when no local derangement or morbid peculiarity exists, many acknowledged constitutional, or blood diseases, subside without any local disturbance, probably by the excretion of the morbid element in the blood through the ordinary channels. Gout and rheumatism are obvious examples of this, and some of the eruptive fevers furnish illustrations of the same truth.

* Watson's 'Lectures on the Practice of Physic,' vol. ii, p. 45 and 491.

There is another analogy between one of these blood diseases and cancer, which it may be useful to notice. When any particular part is attacked during a paroxysm of gout, such as the joint of the great toe, besides the apparent inflammation, there is doubtless a deposition of morbid matter in it. Under ordinary circumstances, this matter is again absorbed and discharged from the body, but very frequently it remains, and causes permanent disease. May not this take place in cancer also ? There can be little doubt that it does, when the cancer is subjected to certain remedial measures calculated to injure the cancer cell, or destroy its vitality.

Although these ideas must be regarded as mere hypotheses, they may not be without utility in preventing a too ready acquiescence in other prevalent ideas on the subject, equally hypothetical, and of injurious tendency. I allude particularly to the notion that because cancer is a constitutional disease, all local remedies must therefore be merely palliative. Even granting that there is a constitutional taint, and that this is sufficient to cause the disease without pre-existing local peculiarity, our assiduous attention to the local affection is not less required. If rheumatism affects the heart, our attention is almost exclusively directed to the local affection ; and in cholera (supposed by many to be a constitutional disease) the great object, in a certain stage of the malady, is to arrest the excessive and dangerous discharge of fluids from the stomach and bowels. Indeed constitutional diseases rarely prove fatal but by causing local disorganization.

It is denied, however, by some, that cancer is a constitutional disease, and certainly its recurrence in the same locality, after an operation, is no proof of its being so. It is one of the characteristics of this disease to penetrate into or infiltrate the adjoining textures, and it is probable that germs of it exist in parts which, from being to all appearance sound,

are not excised in the operation. In one of the most satisfactory cases of cure adduced by M. Velpeau, in the remarkable discussion on cancer still proceeding in the Academy of Medicine at Paris, the disease existed in one of the limbs, and, consequently, a better opportunity was afforded of completely getting rid of it by amputation than can be obtained when it attacks the breast; and M. Amussat's alleged success in cancer of the uterus, brought forward on the same occasion, is more probable on the same account. When referring to this discussion I may observe, that although the extremely rare success of the operation with the knife (granting that it has been successful in real cancer) would not authorize our having recourse to it except under peculiar circumstances, seeing that where it does not succeed it exposes the patient to new dangers, and the recurring disease is of a worse character than before, it would still be of the highest importance as establishing the fact of the curability of cancer by local means. Confidence would be placed in other measures better calculated to effect this purpose. The belief in the incurability of cancer by local means has strangely perverted the reasonings of otherwise estimable writers. M. Lebert, for instance, wishes for no better proof that a tumour is not cancer than that it has been cured. It is equal, in his estimation, to the absence of the peculiarly shaped cancer-cell—a peculiarity, by the way, which has not been found in the cells of some tumours that, judging from their hereditary nature and recurrence, general character and fatal progress, have undoubtedly been cancers. That cancer and other tumours of specific character have peculiar or specific cells, as respects their vitality or properties, can hardly be doubted; but this is a very different thing from the power of always discriminating these by the form or other visible circumstances.

It is curious that there should have been so much dispute about the power of determining with certainty the existence of cancer by the presence of its cell, and so little correspondence in opinion respecting the practical results that should follow our possession of such a power. M. Lebert, for example, tells us that a tumour ought to be cut out, as a palliative measure, the moment it is found by its cell to be cancerous, though he strenuously asserts that it is incurable by such an operation, while most others would determine upon not cutting it out for this very reason. It would be well to settle of what practical use the determination of this point is to be, before spending more time in the inquiry.

§ 2. *Of the Treatment of Cancer by Narcotics and Alteratives.*

A very few observations will be sufficient respecting these remedies, for however useful narcotics may be as palliatives of internal cancer, long and patient trials have shown that both they and alteratives are worthless as cures. Nor are they only useless ; but the greater number of these drugs are highly injurious to the constitution of patients. Although opium and its preparations afford relief from pain, this benefit is obtained at the expense of much disturbance of the digesting and cerebral systems, and much deterioration of the general health. The use of conium or hemlock, in which great faith was at one time placed, has been revived from time to time, in consequence of the celebrity of those who first recommended it, but its revival has only led to fresh disappointment; and no greater advantage has been obtained from arsenic. While the alteration of the blood caused by these poisons is not sufficient to influence the disease, or poison the parasitic deposits, it disturbs some of the more

important functions of the body, and thus, by proving injurious to the general health, instead of retarding, it hastens the patient's fate. "Cicuta, arsenic, iron, iodine, have all been tried," says Professor Burns, "completely, and have so completely failed, that he must be worse than simple who can now use them with expectation of success. The only reason I have ever heard a sensible man give for prescribing any of these, was, 'If we don't prescribe them, the person next consulted will.' It is thus that quackery and the idle parade of physic is kept up, and old remedies, known to be of no avail, are persisted in, rather than inquiry made after new ones, which, if they do not succeed, at least cannot be more useless than those in fashion." "We have heard, indeed, of instances of success, and the narrators, I doubt not, believed what they told: but it is one thing to cure a simple induration, and another to cure a cancer. I appeal to the experience of every medical man whether I be not correct in the assertions I have made."* Although iron cannot be rationally used as a cure of cancer, it may have a beneficial effect in giving tone to the system, especially in cases where impoverishment has taken place from loss of blood. Indeed, every measure, whether hygienic or medical, likely to strengthen the system, is useful; and it is because narcotics and the irritating alteratives are hurtful to the constitution that they should be avoided, unless when excessive pain, not otherwise to be subdued, calls for the employment of the former class of medicines.

* 'Principles of Surgery,' by John Burns, M.D., Regius Professor of Surgery in the University of Glasgow.

§ 3. *On the Ablation of Cancer, or its Treatment
by the Knife or Caustic.*

Without denying the possibility of curing cancer by either of these methods, it must be admitted that this occurrence is so rare, and the immediate dangers and other objectionable results of these practices are so certain, that it ought unquestionably to be the rule never to have recourse to them. Whatever exceptions may have been admissible to this rule, when there was no other remedy in which the slightest confidence could be placed, must be reduced in number as soon as we obtain possession of curative means of more efficiency.

Before our knowledge of tumours was sufficiently advanced to enable surgeons to discriminate them with anything like certainty, it often happened that growths were removed by the knife, under the idea of being cancerous, which were of a different character. Hence the opinion prevailed that, although the excision might be often fruitless, and the disease recur, it was not always so, and consequently, that patients ought to have this chance of recovery afforded them. But when our knowledge of these diseases had advanced to the degree of enabling us to say, almost with certainty, whether a tumour is cancerous or not, and when we find, by inquiring into the results of many hundred operations in cases of real cancer, that there has been always a recurrence of the disease, the recommendation of the conscientious surgeon is very different. He may think the proceeding advisable on some rare occasions merely as a palliative, or to rid the patient for awhile of an offensive disease; but as he knows that the operation often proves fatal, and that when the disease recurs, its progress is more rapid than before, he does even this with much hesitation. And he cannot, in the face of careful

statistical inquiries proving the contrary, promise prolongation of life from the measure.

These statements are founded on numerous collections of facts, of which the following are amongst the most instructive.

Dr Macfarlane, now Professor of the Practice of Medicine in the University of Glasgow, states ('Medical Gazette,' 24th June, 1838), that of thirty-two cases of well-marked cancer of the breast, which were operated upon by himself, and eighty-six cases that were operated upon by his friends, not one was permanently cured. Several of the operations were fatal. He is of opinion that "the operation never arrests, but almost uniformly accelerates the progress of the disease."

Mr Paget, our greatest authority on this question, draws his conclusions from so large a number as 365 carefully recorded cases. Speaking of the periods of the recurrence of the disease after operation, he states that in seventy-four cases, comprising twenty-one collected by M. Lebert, and fifty-three by himself, they were as follows:—

Between 1 and 3 months in 23 cases.

„	3	„	6	„	22	„
„	6	„	9	„	8	„
„	9	„	12	„	6	„
„	12	„	27	„	7	„
„	2	„	3	years in	3	„
„	3	„	4	„	1	„
„	4	„	6	„	2	„
„	6	„	8	„	2	„

"Neither of us," says Mr Paget, "has met with a case in which recurrence was deferred beyond eight years." *

"In deciding," he says, "for or against the removal of a

* Paget's 'Lectures on Surgical Pathology,' vol. ii, p. 347.

cancerous breast, in any single case, we may, I think, dismiss all hope that the operation will be a final remedy for the disease. I will not say that such a thing is impossible; but it is so highly improbable, that a hope of its occurring in any single case cannot be reasonably entertained. The question then is, whether the operation will add to the length, or to the happiness, of life. The conclusion, from the foregoing tables, might be, that the length of life would be the same, whether the local disease were removed or not. But such a conclusion cannot be unconditionally adduced for the decision in a single case. The tables do not include cases in which the operation was fatal by its own consequences: yet these are not a few. In 235 operations for the removal of cancerous and other diseased breasts, I find twenty-three deaths; and, probably, this mortality of 10 per cent. is not too high an estimate—at least, for the results of hospital practice. We have to ask, therefore, whether it is probable that the operations will add to the length or comfort of life, enough to justify the incurring this risk from its own consequences.”

The only statistical account of a different character from the above, which has been published of late, and since our improved diagnosis of tumours, is that of M. Velpeau. But his statement that he has cured a small number of cases by the knife (however consolatory it may be in causing faith in the curability of cancer) can hardly affect the conclusions drawn from the foregoing tables and numerical results; for the cases represented as being successful, are very few indeed in comparison with the whole number this eminent surgeon has operated upon, and consequently, they can only be regarded as exceptions proving the rule, that we are not to have recourse, except under very peculiar circumstances, to a measure that endangers the immediate loss of life without any counter-vailing advantages.

The principal objection to the destruction of cancer by caustics, is, that while they cannot effect more than the knife, and are equally dangerous from their own consequences, particularly erysipelas, they are more painful and tedious in their operation. They recommend themselves, however, to the prejudices of patients, and hence they are the favourite remedies of secret-mongers and charlatans. Except in superficial and uterine cancers, they have long been abandoned by regular practitioners; and with respect to their use in the latter cases, I may notice a statement made by Dr Robert Lee, in his recently published analysis of 100 cases of malignant disease of the womb, "that the fatal progress of the disease was never arrested by cauterizing the morbid structures through the speculum, nor by any other means of treatment."

§ 4. *On the Treatment of Cancer by Pressure.*

HAVING now had under review the modes of treatment in cancer which have been most employed, because they are of oldest date, we proceed to the consideration of others of comparatively recent introduction into practice, but which have the more important distinction of being really useful remedies; these are pressure and congelation.

Pressure is supposed to act beneficially in cancer by diminishing the supply of blood, and, consequently, of nourishment to the tumour; by preventing the growth of the cells from depriving them of the necessary space; by injuring them from direct violence; and by promoting their absorption.

The credit of the introduction of this practice is due to Mr Samuel Young, who, about forty years ago, strove, though unsuccessfully, to render it an established method. The

results of Mr Young's practice, as condensed by a French writer, are as follows:

The number of cases were nineteen; of these seventeen relate to cancer of the breast, two to ulcers of the cheek and upper lip. Twelve cases terminated by cure, five were considerably benefited, the two cutaneous ulcers somewhat improved. The majority of the tumours were hard, irregular, tuberculated, and the seat of lancinating pain: six of them were ulcerated, and discharged ichorous pus. Even in the worst cases the tumour diminished in size, but the patients fell victims to the constitutional disorder.

So favourable a result attracted public attention, and the Governors of the Middlesex Hospital desired that the remedy should be tried in the cancer wards of that institution. Sir Charles Bell, then a surgeon of the hospital, drew up a report of this trial, by no means favourable, stating, indeed, that this plan of treatment had no claims to notice except for its power of alleviating pain. The difference in the results arose, probably, from the different manners in which the principle of the treatment had been carried into effect. Mr Young had not the charge of the patients in the hospital, and it is unlikely that the pains required to apply the pressure properly (and much pains and patience as well as skill were necessary), would be taken by parties who had less interest in its success. This was probably the opinion of the celebrated M. Recamier, who afterwards took up this method of treatment, and used it extensively and very beneficially in the Hotel Dieu of Paris.

Of one hundred cancerous patients, on whom the treatment by pressure was employed by M. Recamier, sixteen appeared to be incurable and underwent only a palliative treatment, thirty were completely cured by compression alone, and twenty-one derived considerable benefit from it, fifteen were

radically cured by extirpation alone, or by extirpation and pressure combined, and six by compression and cauterization, and in the twelve remaining cases the disease resisted all the means employed.

Mr Travers also has given testimony in favour of this practice. He has known scirrhus tumours "gradually reduced, and at length absorbed by equal and persevering compression, as by strips of soap and adhesive plaster."

The last writer who strongly recommends pressure in cancer is Dr Walshe. The apparatus for its application used in the cases he refers to, differs very considerably from that employed before, and its effects, he says, are "removal of existing adhesions, total cessation of pain, disappearance of swelling in the communicating lymphatic glands, gradual reduction of bulky masses to small, hard, flat patches or rounded nodules (which appear to be, both locally and generally, perfectly innocuous), and in the most favourable cases, total removal of the morbid production."

Notwithstanding these very favourable reports the treatment by pressure has never been generally adopted. The principal reason of this is, that many practitioners have been disappointed by finding the application of the measure much more difficult than they had been led to suppose, and many patients cannot tolerate pressure at all, or for a sufficient time, when applied in the way it has hitherto been. Another explanation may be, particularly as respects French surgeons, that the accuracy of M. Recamier's report of his practice has been called in question by his distinguished countryman M. Lebert. His analysis of each case, published by Recamier, has been considered to be nearly as damnatory as was M. Pauly's investigation of M. Lisfranc's alleged success in curing certain cancers by the knife. But although, in all matters relating to microscopical observation, the opinion of

M. Lebert is highly authoritative, it does not follow that the acuteness of judgment and candour required for the solution of a delicate question of this kind are necessarily concomitants of acuteness of eye-sight.

His assertion that even granting that tumours could be as effectually removed by pressure as by the knife, the latter would be preferable, inasmuch as it would do that at once, which can only be done by weeks, if not months, of pressure, would make us receive his opinions on this subject with caution ; for we learn from himself (and his statistics constitute his strength), that one-sixth of the persons operated upon for cancer of the breast in the hospitals of Paris die from the effects of the operation. It is a generally admitted fact also, that where the disease returns after excision (as it does, according to the same statist, M. Lebert, in two-thirds of the cases of cancer of the breast within three months), its progress is more rapid than it had previously been. M. Lebert asserts, that though M. Recamier succeeded in removing many tumours on the breast by pressure, not one of these, even judging from his own description of them, was of a malignant or cancerous nature. In answer to this we may observe, that although it is not unlikely that M. Recamier may, with many others, have been occasionally mistaken, it is most improbable that so keen an observer as the great surgeon, to whose revival of the speculum we owe so much of our knowledge of uterine pathology and therapeutics, should have been always in error. Gratitude is due to him for preserving a valuable mode of treatment that might have otherwise been cast into oblivion by the rash report of Sir Charles Bell, for even M. Lebert himself admits that compression, imperfectly employed as it was by Recamier, "will alleviate the suffering of the patient and diminish the size of the cancerous tumour."

One great defect of the compression employed by Young and Recamier was its inequality. The bandage pressed too much on certain prominent parts of the tumour, and too little on others, and the pressure besides was what has been termed a dead pressure ; it had no elasticity. These, and an additional defect—that the ribs were compressed as well as the tumour, are removed by the apparatus described by Dr Walshe in his Treatise on Cancer, in which a truss spring presses an air pad placed upon the tumour. My study of the action of fluid-pressure in the dilatation of contracted passages (to the advantages of which my attention had been first directed by the contriver of the apparatus just mentioned), and of the fittest instruments for applying it, had led me, at an early period, to devise the means for securing this benefit of equality in pressure applied to the exterior of the body, which I have described in an appendix to the second edition of my Treatise on Stricture of the Urethra. In the meantime, and quite independently, the fluid-pressure apparatus for the breast, just alluded to, was devised, but in it, the means adopted for making and regulating the pressure were different from those which had occurred to me. Unless the patient has it in her power immediately to lessen the pressure when it causes uneasiness, or to increase it when more can be borne, the instrument is defective. Instead, therefore, of employing a truss-spring, I proposed to control the pressure, either by increasing or diminishing the quantity of air filling a certain space, or by raising or lowering a metallic plate in contact with the air bag, by means of a short tourniquet screw, kept in position by a broad bandage, by a tight-fitting article of dress, or by traversing a light padded frame surrounding the chest like a broad aneurism compressor.

By the last of these arrangements the pressure is, in a

great measure, confined to the tumour, an advantage which could also be obtained, were the patient lying on a couch, by placing a loose weight upon the air-bag. The necessity of equalizing the pressure on the tumour as much as possible was not unknown to the surgeons who first made use of this expedient, as appears by their employment of layers of agaric with the bandage, and pieces of sheet lead modelled to the part ; and were a living or elastic pressure to act upon a metallic plate cast upon a model of the tumour, or a thick piece of accurately fitting gutta percha, this object would, in a great measure, be attained.*

But much remained to be accomplished after equalizing the pressure, and giving that perfect control over it at the will of the patient which is afforded by the injecting syringe or the screw. The principal objection to pressure as it had hitherto been practised, and the principal source of its failures, was the impossibility, by the apparatus employed, of regulating the temperature of the morbid part subjected to it. The accumulation of compresses, and still more, the air cushion, raises the heat of a part which ought to be kept cool; and if irritation be so induced, the increased heat becomes intolerable as well as noxious. To render the apparatus complete, therefore, it is necessary that there shall be conjoined with it some contrivance for the perfect regulation of temperature. This is effected by establishing a current of water, of the proper temperature, through the bag or cushion, while the appropriate degree of pressure is maintained. The great objection which Professor Burns had to compression in cancer by the ordinary methods—"that it was almost impos-

* A layer of plaster of Paris of the thickness of a mattress, exactly moulded to the body, and with an appropriate covering, would constitute a soft bed, useful on certain occasions in surgery, when long-continued and perfect stillness in one position is required.

sible so to regulate it as to prove, on the one hand, so efficient as to cause absorption, without, on the other, producing much excitement"—is thus removed; the temperature is regulated by a current, and the pressure by a syringe or a screw.

There can be no surprise among surgeons at the difference of effect produced by difference in the mode of applying pressure in cancer, for they are familiar with such differences in other applications of the same useful agent. A common bandage, or roller, may, in the treatment of wounds or ulcers, be either a very beneficial or a very injurious application, according to the manner in which it is used. The same may be observed of the means whereby pressure is made in the cure of aneurism; and the history of this very important improvement in surgery (which we owe principally to the perseverance of Dr Bellingham) bears a singularly close resemblance to that of pressure in cancer. The whole circumference of the limb was, at first, compressed, as well as the artery, and so much disorder was the consequence as prevented surgeons continuing the practice. At length it occurred to Mr Todd, of Dublin, to confine the pressure to the artery by using a truss-spring, which is the expedient that has been recently adopted in cancer. But the aneurism compressor was still far from being improved to the degree that would make it generally useful. This was accomplished by the encircling hoop and the elastic screw-pad, closely resembling the means now employed for controlling the pressure in cancer. The expedient for the regulation of the temperature in cancer is a further improvement required by a peculiar exigency.

That the principle of this treatment of aneurism is perfect, although the mode in which it is carried out is still very often the reverse, is now, I believe, the general opinion. Only a few weeks ago it was admitted by M. Maisonneuve,

in the course of a discussion in the Surgical Society of Paris, on a fatal case of aneurism, that he had abandoned pressure in its treatment, and resorted to the ligature only because he had not access to a proper compressor.* M. Lebert says that the interposition of mechanical skill is not required in applying pressure in cancer. This opinion may account for the low estimate he has formed of its value ; but he might assert, with as much reason, that the circulation through an aneurism could be as well retarded by twisting a rope round the limb as by Carte's compressor, or that a leg may be amputated by an axe as well as by a knife and a saw. It is not always from ignorance of principles that want of success in medicine proceeds, but from incapacity to carry them into effect.

Having minutely described, in a separate treatise, the construction and management of the current apparatus, by which a perfectly uniform temperature, appropriate to the condition of the part, may be maintained for any length of time, and be conjoined with an appropriate amount of equal pressure,† I shall not now enter upon the subject further than to state, for the information of those who are yet unacquainted with its principle, that the apparatus consists essentially of a waterproof bag or bladder, to which two long flexible tubes are attached, in order that a constant stream of water, of the required temperature, may be passed through it, the pressure on the tumour being, at the same time, regulated with the greatest nicety by the height of the reservoir of water.‡

* L'Union Medicale. December 28th.

† On Indigestion ; with an account of an improved mode of regulating the temperature in various diseases.

‡ A cushion with *one* tube for filling and emptying it at intervals, is a simple form of the apparatus, but it does not answer nearly so well.

When the patient takes exercise, it is necessary, as has been remarked by Professor Bennett, that the current should be suspended, and another mode of producing pressure substituted.*

I will conclude this section with the observation that, although inferior both in remedial power and extensibility of application to intense cold, pressure is a valuable remedy in cancer, and often a great adjuvant of congelation. It must be properly applied, however, to deserve this character. Each case requires a peculiar management with respect to it, and the practitioner had better not employ the measure at all than neglect these peculiarities, or supply the required modi-

I am glad, however, to observe, that the large waterproof cushions with such tubes, described in my work on Indigestion, are now generally sold in the caoutchouc shops. They are obviously such excellent substitutes for poultices or fomentations wherever continuous heat and moisture are indicated, inasmuch as the water can be changed without removing the cushion, or disturbing the patient, that the slowness of their introduction (for nearly ten years have elapsed since the publication of my work), can only be attributed to the high price which the manufacturers have put upon them. It is to be hoped, that the competition created by greater demand, will soon remedy this evil. If these large cushions are used as soft pillows, or, in other words, to equalize the pressure on the part of the body resting upon them, they require a particular management not yet understood by the makers.

* On Cancerous and Cancroid Diseases, by J. H. Bennett, M.D., Professor of the Institutes of Medicine in the University of Edinburgh, page 239.

In a visit to Perth, three years ago, I had an opportunity of seeing a case of cancer of the breast, in which a current of iced water passing through a bladder, had, on the recommendation of Dr Bennett, been used with much advantage. A widely spread and persisting inflammation of the ulcerated breast, attended with severe pain, had been completely subdued by a continued and unremitting application of the apparatus.

fications imperfectly. If pressure be used as it too often has been, it is not only useless, but may be positively injurious in increasing the patient's sufferings, and accelerating the course of the disease.

§ 5. *On the Treatment of Cancer by Congelation.*

THE term congelation has, in respect to the remedial or anæsthetic properties of intense cold, been used to express either a degree of cold capable of congealing the adipose matter under the skin, or this effect itself. But as this effect is probably of little or no importance, whereas the efficacy of the agent is owing to its benumbing property, the temporary arrest of the circulation, its action on the microscopic cells, and other unknown changes which it produces on the vitality of the part—the term, though familiar and convenient, is not the most accurate that might have been chosen.

The degree of cold usually required for these effects is below zero of Fahrenheit, and it has generally been produced by mixing together certain proportions of pounded ice and various salts ; which, in consequence of their chemical action on each other, rapidly dissolve, and abstract during their solution, the heat from that part of the body with which they are in contact. The great difference between the degree of cold generally required for congelation and that of ice, which is the lowest degree formerly used in medicine, a difference amounting to more than 35° of Fahrenheit, causes such dissimilarity in their effects on the animal textures, that they must be deemed remedies of quite a different character. It is true, that in some of its effects, congelation may be regarded as the completion or attainment of purposes commenced or aimed at by the usual degrees of cold, but as respects others, and those particularly which are concerned

in its operation in cancer, there is no analogy between their modes of action. This remark is deemed necessary on account of the important error having been sometimes committed, of supposing that congelation and the application of ice are remedies possessing similar qualities, though differing in degree. There is at least as much difference between their actions as between the action of different doses of mercury—between the small dose that acts as a laxative, and the large salivating dose which arrests inflammation.

When a frigorific mixture is applied to the skin, it instantly benumbs it, and the sensation of cold is, on this account, less than that produced by ice. In many cases of disease, there is no necessity for proceeding farther. If the frigorific be continued in contact a few seconds longer, the skin is blanched from the arrest of the circulation, and this change is accompanied with a tingling sensation, like that produced by mustard. The insensibility is now complete, and the skin might be cut without causing pain. If the frigorific be removed, the part returns to its usual condition in about six minutes, excepting that a slight redness follows, of several hours' duration. In the treatment of cancer, the congelation is maintained, on each occasion, for several minutes, and the redness and congestion of the skin are, consequently, of longer continuance. On no occasion has greater change been produced than an exudation of serum under the cuticle. Not an approach to inflammation has ever followed the longest continued remedial congelation, although on this, as on other occasions in surgery, totally unconnected with the effects of cold, mere redness has often been mistaken for a sign of inflammation.

The success which I had experienced in the treatment of external inflammation by momentary or short-continued extreme cold, and the relief from pain which it had afforded in

various forms of neuralgia, first led me to expect advantage from its use in cancer, for in many cases of this disease, both of these conditions are present. I soon found, however, that its advantages are not limited to these effects, important as they are. Congelation not only gives relief from pain, and removes inflammation, but it arrests the progress of cancer. That it is capable of effecting an absolute cure, it is by far too soon to say, for cancer may remain in a latent state for a period of many years ; but this I will aver, that whether used alone, or in combination with pressure, it is incomparably superior to any means yet employed in the treatment of this disease.

The very circumstance of the great power of this remedy over local vitality, accompanied as it is with perfect safety, would have recommended its trial in a malady that had resisted all other measures. The temporary stoppage of the circulation, the alteration in the tone of the blood-vessels, the prolonged suspension of sensibility effected by it, indicate a remedy of no ordinary power, and this is confirmed by its unfailing efficacy in many other diseases. Intense cold is as yet best known to the profession as a mode of producing insensibility in surgical operations, but the power it exerts on this occasion of preventing inflammation from the wound, manifests extraordinary remedial virtue. Its operation as an anæsthetic has been narrowly watched by parties not much disposed to regard the rival of chloroform with favour, but none of these have observed that inflammation follows the wound of a part that has been congealed.

In investigating the pretensions of a new remedy, we require evidence, not only of its power of palliation or cure, but of its general safety. Large doses of opium, or copious bleedings, unquestionably alleviate the pain from cancer, but it is well known, from their effects in this, as well as in other

diseases, that they as certainly prove injurious to the patient's constitution, or shorten his life. Now, there is no deficiency of evidence respecting the safety of the remedy which I have to propose as their substitute. Congelation has already been employed, thousands of times, for remedial and anæsthetic purposes, without the slightest injury on any one occasion. The prejudice against intense cold, on account of its having hitherto been only known in its uncontrolled agency, was not extraordinary, as a similar prejudice has existed against many other powerful agents, which, before they were employed medicinally, had only been known as noxious to the animal economy. A person exposed to intense cold in a severe winter, and a person breathing the fumes of mercury or arsenic in a manufactory, are both exposed to danger. Powerful agents are operating upon them uncontrolled. But if the intense cold be limited in duration and extent, and small quantities of the mercury or arsenic be exhibited in the form of blue pill, or Fowler's solution, instead of being hazardous to life, they will constitute valuable remedies. To object to short and limited congelation because persons have lost their limbs or their lives by long exposure to cold, would be as unreasonable as to condemn leeches or the lancet, because persons have bled to death from wounds ; or the exhibition of laudanum in sleeping draughts, because those who have swallowed large quantities of it have been poisoned ; or medical electricity because persons have been killed by lightning. Nor is another theoretical objection better founded, that injurious re-action must be the consequence of shorter periods of congelation. Instead of re-action following remedial congelation, a very opposite condition is its consequence, insomuch, that parts cut in operations after anæsthesia has been produced by a low temperature, have invariably healed more quickly than under ordinary

circumstances. The vessels appear to be rendered incapable, for a long period, of assuming such a degree of morbid excitement as would materially interfere with the healing process.

Having premised these observations, I will now relate, as briefly as is compatible with utility, a few cases of cancer, in which the treatment by congelation was employed, for the purpose of explaining more intelligibly, perhaps, than could be otherwise done, how the remedy is applied. These are selected from cases already published on the following accounts: they all furnish a fair illustration of the advantage of congelation in advanced cases; two of them relate to patients who were in public charitable institutions, and, consequently, where other practitioners had an opportunity of seeing them; and the particulars of the other two are given on the best authority, namely, the letters of the husband of one of the patients, and those of the other patient herself. I think it proper to make this explanation, because I know with what caution all statements respecting the favourable effects of remedies in cancer are received. Were I to give the histories of cases where the disease has appeared entirely to cease, I am well aware that, as in those adduced by Recamier, alluded to in a former section, the suspicion would immediately arise, and possibly the allegation be made, that I had mistaken the nature of the tumour; and I have, consequently, preferred bringing forward strongly-marked and indubitable cases of cancer where the benefit received, though great, was incomplete; but though incomplete, was yet much beyond what could be attained by any other existing method of treatment.

The first case which I shall relate, was the first in which congelation was employed; it appears, as published in the former edition of this tract.

CASE I.—CANCER OF THE UTERUS.

Mary R—— was admitted a patient at the Brighton Dispensary on the 25th July, 1849. She is of short stature, thin, of sallow complexion, and about forty-two years of age. She had been lately in St Thomas's Hospital on account of the same disease for which she now sought assistance; and had complained about eighteen months previously to her entering the hospital.

Her principal symptoms were frequent and severe paroxysms of pain, chiefly in the back and hips; a profuse and offensive discharge, and occasional hæmorrhage, from the vagina; and derangement of the digestive organs. On examination, the neck of the womb was found hard and ulcerated.

For six months the usual palliative treatment was pursued—viz., the exhibition of the preparations of opium and the application of leeches. She complained that the opium made her constantly drowsy and unfit for her occupation as a needlewoman; and the pain was, notwithstanding its use, occasionally so severe as to oblige her to rise from bed and roll on the floor of her room.

In January, I determined upon a trial of congelation, having previously made another careful examination of the uterus. The disease had by this time considerably extended: the neck of the womb was now completely destroyed, and there were several warty excrescences in the upper part of the vagina. Congelation was effected by means of a frigorific mixture of two parts of finely-pounded ice and one part of chloride of sodium, introduced through a wide speculum of gutta percha, having the lower part of its upper opening of a cup-like form; and in order that the temperature might be maintained at the requisite low degree, or about zero of Fah-

renheit, the dissolved ice was continuously drawn off by a syphon of peculiar construction. This peculiarity principally consists in a large two-necked bottle being connected with, or constituting part of, the long arm of the syphon ; and the purpose of it is, that a stream of water may continue to flow along this part of the syphon, and keep up the suction at the upper extremity, notwithstanding any interruption in the supply there. A tube of vulcanized india-rubber forms the remaining part of the syphon, with a small glass tube joined to it, where it enters the speculum, in order that the rising column of liquid may be seen, and the flow regulated by a stop-cock.

The success of this application exceeded my expectation. So soon as I had learned to apply the frigorific properly, I was able to give immediate and entire relief, and this has generally continued complete for about a week. The discharge was soon diminished, and became much less offensive, and the tendency to hæmorrhage ceased. From twenty to thirty applications of the frigorific have now been made, and scarcely any other remedy has been used. No advance of the disease appears, on examination, to have taken place, and in other respects there is decided improvement. The patient is not so thin ; her appetite is tolerably good ; she is stronger, and able to occupy herself in the usual household affairs.

She is directed to call whenever the pain returns. The speculum is generally introduced by herself while in the supine position, and she covers her extremities with a sheet before I enter the apartment. The nates are raised, in order that the speculum may be sufficiently upright to contain enough of the frigorific ; which has usually been kept applied for a period varying from a quarter to half an hour. There is, sometimes, a slight sensation of smarting produced for a minute or two ; and the pain from the disease has generally

ceased within the first five minutes. If the womb be now inspected by removing the frigorific from the speculum, the greater part of its visible surface will be found perfectly white and hard. The application is terminated by allowing about a quart of cold water to run rapidly through the speculum and syphon, for the purpose of gradually restoring the natural temperature, and washing away any remaining salt.

The above report of the case of M. R. was published in the *Lancet*, in the month of August last. She is still my patient, but has much improved, both as respects her general health and the local affection. Only one short application of the frigorific has been made during the last six weeks. She has had no pain during that time, and there is scarcely any discharge. The ulceration still exists, but it is diminished in extent, and has much less of the malignant character.

The subject of this interesting case has, during her long illness, been under the care of various practitioners. Dr Tayler, and another surgeon of Deptford, attended her when first attacked with flooding; and on her removal to St Thomas's Hospital, she became the patient of Dr Barker. While under treatment by congelation, she has been seen by several who were desirous to observe the manner of applying the remedy; of whom I may mention Dr Wilson and Mr Furner of Brighton, and Dr Hamilton of Paris. She left Brighton about the same time that I removed to London, and I have not again heard of her.

CASE II.—CANCER OF THE BREAST.

The next case was the first of cancer of the breast in which this treatment was adopted. The patient, an elderly woman, of the name of Pocock, and a patient in the Middlesex Hospital, had congelation applied, on the 22nd of June, 1850, for

an open or ulcerated cancer of the breast, which had long caused severe and almost continuous pain. About half-a-pound of ice having been put into a towel, and broken up into powder on the floor of the ward, by means of a flat iron, was quickly mixed with about half the quantity of common salt. The mixture was then poured into a small net of the thinnest silk gauze, and immediately applied to the breast, over a circular space of about four inches in diameter. The brine, as it trickled from the net, was absorbed by a moist sponge held underneath; and the net was occasionally raised, for the double purpose of watching its effect and of stirring the mixture. The skin became white in a few seconds, and the congelation was continued for precisely three minutes. There was a slight pricking sensation produced for about half this period, which subsided upon the part becoming benumbed; and a similar sensation was experienced for some minutes after the congelation had ceased, although the greater part of the tingling that would be otherwise felt at this time, was prevented, by keeping the part covered for about five minutes with a net containing ice, and by the subsequent application of a rag dipped in cold water.

This sensation of tingling or smarting, which would otherwise succeed the return of sensibility to the part, is best prevented by placing upon it, for a few minutes, a thin bladder containing water and ice, or by passing a current of iced water through the bladder.

I did not see the patient again until the 6th of July,—fourteen days after the application,—when she told me that there had not been the least return of pain. The sore on the breast was clean, and even healthy in appearance; and nothing but the common water-dressing had been applied. There had been no necessity for a repetition of the morphia, to which she had been so long accustomed.

I saw this patient in the Middlesex Hospital, and for the last time, in March, 1851. I learned that she had left the hospital in the preceding September, but as the pain returned she came back, and had the congelation repeated by the surgeon of the ward with the same benefit as before. She had had little pain from that time to the period of my visit. I was long afterwards informed, that when she left the hospital on the second occasion she was in a much better condition, both as respects her general health and the local affection, than when I last saw her. She had never again applied for relief, and her address, unfortunately, was unknown.

CASE III.—CANCER OF THE BREAST.

I was requested, on the occasion of a journey which I made to the north of Scotland, in the spring of 1852, to visit a lady residing there, affected with cancer of the breast. I learned from her that there had been a hard and painful swelling in it for upwards of two years; that ointments, and other remedies had been tried for the removal of this in vain; and that since she had refused to have the breast amputated, about nine months previously, she had consulted no medical man on the subject, and had only used the mildest applications.

The patient was about fifty years of age. Her general health was not good, but much of the derangement of the stomach and other organs was attributed to the increasing and intense anxiety she laboured under on account of the affection of her breast. On examining this, I found a hard tumour of considerable size, or what appeared to be two contiguous tumours; the nipple was considerably retracted, and there was a slight morbid exudation from it; the pain was of a plunging character, and of such frequent recurrence as much to disturb

her night's rest. The disease was evidently gradually progressing.

I applied a mixture of ice and salt for about five minutes on two occasions, with only about a week's interval between them, as I was anxious, before leaving, to make a second application in the presence of her husband, who was to continue the remedy, and to whom, accordingly, I gave the necessary instructions respecting it.

The results of his administration of the remedy were communicated to me from time to time, and the following are extracts from his letters:—

“ May 25, 1852.—In writing to you I feel intense pleasure in having to communicate that Mrs M—— has been regularly and progressively improving since you saw her. We have got the caddis, goldbeaters' skin, oil skin, &c., and the gutta percha frames for the net and bladder have been nicely formed. In fact we have got everything you suggested, so that our apparatus and accessories are complete. We get the ice now daily, if necessary, and the applications have had the most desirable effect. * * * There is no internal pain whatever; the tumours are at least decreased *two-thirds*, and she sleeps well and comfortably at night. Everything is very encouraging, and as you could wish.”

“ May 31, 1852.—I am truly happy to say that Mrs M——'s breast exhibits a daily improvement, and there is, consequently, the greatest encouragement for perseverance in the same course. The *severe* application of the ice and salt has not been tried since you left, but the other (the milder) has been several times, and always with the best results. We shall try the severe application in a day or two, however.”

June 14, 1852.—“ A *severe* application of the ice and salt was made on Wednesday, and although kept on for four

minutes, and until the colour of the skin became entirely changed, it produced no blistering. The bladder with iced water was kept on for half an hour afterwards, and there has been great ease since from occasional applications in that way. The tumours are perceptibly decreasing."

It is necessary, in explanation of this quotation, to state that the description of the effects of the frigorific on the appearance of the skin, would show that the materials had not been properly prepared or mixed, as when they are so, the skin is generally *immediately* blanched by them.

"July 14, 1852.—The tumour continues very evidently, though slowly, to lessen in size and hardness. The general health I consider to be in a better condition than when you saw Mrs M——. The ice and salt has been *strongly* applied four times since you left."

"27th.—I now write, owing to our being disappointed of ice as calculated on when I last wrote. Mr ——, of the ——, who always supplied us, has sustained a severe loss by the man who had the charge of the ice-house, leaving the door open for three days, so that the whole stock was dissolved, and there is not a bit to be got in the north."

After mentioning some details respecting the difficulty of procuring ice (which, had my correspondent been aware of the circumstance, might have been artificially made by a chemist at small expense), he continues—

"I am glad to say, that the long interval has not been so prejudicial to the breast as I dreaded."

As matters appeared to my correspondent to go on in a satisfactory state, I did not again hear from him until after a lapse of nearly a year.

"June 16, 1853.—The ice and salt has not been applied since I last wrote to you. There has, however, been no relapsing. The nipple has sunk or receded considerably since

you saw it, but the tumour has almost disappeared—that is, there is very little hardness or tenderness remaining. There is, however, a hollow or kind of indentation across the breast near the nipple, but not the slightest indication of a tendency to suppurating. There is, also, a frequent feeling of shooting or twinging pains.”

In replying to this letter, I expressed great regret that so long an interval had been allowed to elapse without using congelation, as there appeared reason to fear that a remnant of the disease was still present ; and in the next communication from the husband of my patient (the last which I have received), dated Nov. 15th, he mentions that the ice and salt had again been once applied. The only interesting circumstances noticed in this letter, respecting the condition of the breast, are, that “there is no hardness or tumour ;” although there was occasional annoyance from the sticking of the lint to the skin in consequence of the “exudation of a gummy substance close round, but, so far as I can see, not out of the nipple.”

CASE IV.—CANCER OF THE BREAST.

IN the following case of scirrhus cancer of the breast the tumour was not only larger, but it was more deeply seated in the breast than that just related, and, consequently, there was more difficulty in causing the remedial influence of congelation to pervade it. It constitutes, however, a better example of the mere arrest of the disease, for I have little doubt that had the other case continued under my own immediate care, all trace of cancer would have soon disappeared, and the case now to be related would, I think, have made quicker progress to recovery had the treatment been modified, and particularly if pressure had been combined with congelation.

It was early in May, 1853, that I was consulted in this case. The patient had previously left her residence in Kent to ask the opinion of Mr Lawrence, who not only agreed with her usual medical attendant, that the tumour in the breast was cancer, but said that unless she immediately submitted to its excision, it might prove fatal within six months. She preferred the treatment by congelation. On examining the breast, I found a hard, flattened, hemispherical swelling, of about three inches in diameter, knotted on its surface, contiguous with, but not adhering to the skin, excepting at the nipple, which was retracted, and slightly ulcerated. There was, at times, a lancinating pain. The disease had existed more than two years, and although the usual routine of treatment had been had recourse to, nothing had appeared to be of any service. The disease gradually but steadily advanced.

The frigorific mixture of ice and salt was applied for about four minutes, the usual precautions being taken to prevent the smarting that would otherwise take place on the return of sensibility to the parts which had been congealed. A similar application was repeated about every month by her medical attendant in the country; and after about six such applications I again received a visit. The tumour appeared to be smaller than when I first saw it, the decrease being chiefly in its thickness; and in other respects there was great improvement. She was advised to continue the same plan of treatment, and the results are recorded in the following extracts from a letter which I received from her. It is dated April 6th, 1854.

The substance of this letter is, that the tumour continues of nearly the same dimensions; though it appears to be a little longer it is less thick. She has not "for the last four months known what a bad night is, being always free from pain," though during the day there are at times "three or four,

or perhaps more transient pains, while at other times days are passed without any pain." Her "general health is very good, and is kept good by regular exercise in the open air." As I had expressed the opinion that she should make longer intervals between the application than a month, in order to ascertain whether the tumour was not now merely a lifeless mass, like a bullet in the flesh, which might give occasional uneasiness, particularly when the mind was intent on the subject, she states in reply: "Five weeks have intervened between the last applications; I have these renewed, because, while I feel there is life in the tumour, I think they are necessary." She concludes a letter written a month previously (March 4th), by the expression of a wish "that every sufferer from the same disease were as happily delivered from the effects of cancer as she has been by this remedy;" and another letter, written six months afterwards, contains the following passage in reference to the condition of her health: "The result is, at the end of sixteen months, instead of being dead on the termination of fearful suffering, as predicted by Mr Lawrence, in consequence of my not having submitted to the operation which he proposed, I am infinitely better than at the time I consulted him, according to the testimony of my own feelings and of two surgeons, who, having long watched my case, are able and willing to give their more scientific testimony to the efficacy of the means of cure which I have employed."

In speaking of the benefits of congelation in cancer, we must make a distinction between its power of alleviating pain and subduing whatever degree of inflammation there may be present, and its power of arresting or curing the disease. Cold, in its moderate degrees, has long been occasionally employed as a palliative in cancer, and the benefit received from these, would no doubt have led to the use of greater degrees, in

the expectation of procuring a greater and commensurate advantage, had not this been prevented by the prevalent error respecting the risk from very low temperatures. That this advantage is proportionate, is manifest from the cases just related, in which the relief obtained was not only very superior, but almost forms a contrast to that usually derived from the ordinary means. Besides that this relief is more immediate, complete, and lasting than that obtained from the preparations of opium and other narcotics, it is gained without the cerebral and gastric disturbance, without the stupefaction, sickness, and constipation that generally attend the use of these, and which, in addition to the suffering they occasion, must shorten the period of life, more than the partial freedom from pain thus obtained can prolong it. The preventing and subduing of inflammation, more certainly than by detraction of blood, and with no such expense of general strength, as must be caused by large or repeated leechings, is another great advantage of congelation, considered merely as a palliative. "When," to use the language of Mr Paget, "inflammation is averted from it, a cancerous ulcer may exist long and make slow progress, without extreme pain or disturbance of the health; it may be no worse a disease than the 'occult' cancerous growth; and ten or more years may pass with the health scarcely more impaired than at the beginning."*

The power of arresting the progress of cancer is rendered unquestionable by the above cases. The ulcers, where they existed, partially healed, or were lessened in size, while their irritability was reduced, and the general health was improved.

The power of absolutely eradicating or curing the disease

* Paget's 'Lectures on Surgical Pathology,' vol. ii. p. 336

cannot be proved by any cases, however apparently successful, until many years have elapsed after the cessation of all the symptoms of disease; for no point is better ascertained in the history of cancer than that the disease may continue latent for a very long period. Although (as we have seen by a table extracted from Mr Paget's lectures) the recurrence of the disease is very frequent within six months of the operation, it may be protracted to eight years. But even granting that it were otherwise, that the absence of all symptoms during four years were to be admitted as a proof of cure, there would be great difficulty, while the present sceptical feeling on the subject exists, in persuading surgeons that the tumour was really of a malignant character. Most would agree with M. Lebert in regarding such an alleged cure as a proof that the disease was not cancer. All, consequently, that can be done, as respects objectors of this class, is to show that, by the adoption of certain means of treatment, the suffering is completely removed, and life prolonged with comfort to an indefinite extent. Admitting that the whole of the cells constituting a large cancerous growth could not be destroyed by the measures proposed, nor the specific disposition to form them be removed, still, if they were prevented from increasing beyond a certain extent, or from approaching and disorganizing or ulcerating the skin covering the tumour, a very great point would be gained—a point closely approximating the cure.

The following passages from the work on 'Cancer,' of Professor Hughes Bennett, of Edinburgh, convey so clear an exposition of the remedial measures best adapted to fulfil the indications arising from our improved knowledge of the nature of cancer, that I will make no apology for inserting them:—

“A cancerous growth is a vascular structure, which con-

sists of nucleated cells, infiltrated among a fibrous stroma, and its power of growth, extension, and re-development, is dependent on the amount of cells it contains. It follows, that to retard the growth of the cancer cell, when once formed, is to retard the advance of cancer itself, and that to render it non-productive is to arrest its progress."

"The growth of all cells, in the vegetable as well as the animal world, is more or less dependent upon certain external circumstances, which are under the control of man. Thus their development is favoured by an elevated temperature, a proper supply of moisture, room for expansion, and by certain localities. It is principally by a regulation of the two former that the horticulturist is enabled to push forward the growth of plants in climates where otherwise they could not exist. The influence of these agents is no less observable in the animal world. All eggs and young animals require warmth to favour their growth, and maturity is reached earlier in the tropics than in temperate regions. In the same manner, excessive cold, dryness, want of room, and unfavourable position, are circumstances hostile to cell development."

"In a cancerous growth, the tendency of which is to excessive cell-formation, we evidently retard its advancement by the application of cold. Were it possible, indeed, to bring down the temperature of an entire growth below the vegetating point, we must inevitably kill it; but supplied as it is through the warm blood within, this is impossible. Still the external application of cold is one of the most powerful means we possess of retarding the progress of a cancerous or any other growth."

Although nothing analogous had been employed in medicine, the horticulturist was fully sensible of the advantages, as respects the health of his crops, of seasonable severe cold in destroying the germs of parasitic animal and vegetable life.

The opinion expressed in the last of these extracts preceded the discovery that it is possible to bring down the temperature of morbid parts below the vegetating point, by arresting for a time the supply of warm blood; and that, although such a temperature will be destructive to the life of animalcules or cells, possessing independent vitality and lodged in the body. (for Spallanzani ascertained that few animalcules could survive exposure to a cold of zero Fahrenheit), it will not injure the containing textures, because these are dependent for their life on organs (the brain and heart) beyond the influence of the cold, and which are ready, the moment that congelation ceases, to renew the circulation and nervous energy.

I believe that this is the true explanation of the *curative* action of extreme cold on cancer. Its palliative action in immediately relieving pain and removing inflammation, are probably owing to its influence over the vessels and nerves of the part.

The idea, however, of using congelation in this disease, was not suggested by any pathological theory, but by the observation of its effects in other diseases in some respects analogous—which, in the present imperfect state of physiology, is the most certain method of advancing therapeutical science. What instantly relieves a severe neuralgic or rheumatic pain; at once and permanently removes a distressing and long-enduring pruriginous or impetiginous eruption; speedily converts a highly irritable into a healing ulcer; or completely arrests any acute inflammation within its reach—appeared very likely to be useful in cancer. It may be as difficult to account for the curative operation of cold in cancer as to explain the action of bark in ague; but if a rational explanation can be given in addition to experimental proof, there is an obvious advantage in adducing it.

The cases, it may be said, which have been related in the preceding pages, however confirmatory of the statement that congelation is an excellent palliative of cancer, do not strengthen the hopes, founded on the above considerations, of its proving absolutely curative ; for the patients are represented as being still affected with the disease, though of a less acute character. In answer to this, it must be mentioned that the disease was far advanced before the treatment by congelation was had recourse to ; and that probably, to prove quickly curative as well as palliative under such circumstances, either a stronger frigorific must be employed, or the same must be employed for a longer period on each application, or be more frequently repeated. How long, on each occasion, congelation effected by the means which I have described, can be continued with advantage, I have not determined. I can only say, that as I have never yet known injury produced by the longest actual congelation deemed necessary to effect other remedial purposes, I think that cancer may be safely subjected to it for twice or three times the period I have hitherto applied it, and that much stronger frigorifics might be safely used. Even solid carbonic acid, acting through a proper medium, may, perhaps, be rendered available. The cases reported are, therefore, by no means unfavourable to the supposition of the curability of cancer by congelation. On the contrary, the evident decrease of ulceration, or the superseding of the destructive by the reparative process, and the marked improvement in the general health, would lead to a very different conclusion.

As some degree of swelling and hardness has generally remained in the breast after the treatment of cases upon which, apparently, congelation had had more influence than on the last of those reported above, it becomes a question whether this is to be regarded as a sign that the disease still exists. In

my own opinion, mere hardness is no proof of the presence of malignant affection, and it is certainly no source of inconvenience to the patient. On the supposition that cancer is essentially a congeries of living cells, we may reasonably think that the absorption of these, after their vitality has been destroyed, must be slow if it takes place at all ; and perhaps the irritation that has induced patients to apply for the frigorific application after a long interval, may have proceeded from the presence of this inert mass of dead cancer cells, and not from an active, increasing tumour.

In estimating the effect of the application of frigorific mixtures to the animal tissues, it is necessary to take into account the condition of the part subjected to them, in respect to its own vascularity and that of the neighbouring parts, and as to whether it be in a state of inflammation or not. A highly vascular or inflamed part necessarily requires, in order that the same effect should be produced, a more powerful congealing operation than a part in the reverse condition. Although five minutes is the usual period of the congelation which I apply to the exterior of the body, when the skin and subjacent tissues are in their normal state, it was, as has been related, continued much longer in the case of uterine cancer, and yet probably not with the effect which it has when applied to the exterior, on account of the higher vascularity and natural heat of that organ.

I shall now proceed to notice certain important points connected with the use of congelation ; premising, that if the method of applying it to cancer in the breast and uterus—its most frequent seats—be well understood, little difficulty will be experienced in making the modification required for other localities.

The application of intense cold to external parts is compa-

ratively easy, and with respect to cancer of the breast, what has already been said in the course of the above reports of cases, added to the instructions for preparing and applying frigorific mixtures in my paper on cold as an anæsthetic, will be sufficient. But it is very much otherwise in respect to congelation of the womb. To succeed in this use of the remedy much care is required, and a thorough acquaintance with the subject. On this account, it will be advisable that whosoever undertakes this mode of treatment, should first familiarize himself with the application of frigorifics in those diseases where it is only necessary to apply them to the surface of the body; and if their application to cancer of the uterus should fail in his hands, he must candidly determine whether the failure is to be attributed to want of potency in the remedy, or want of skill or expertness in the administration of it. If this treatment be imperfectly conducted, mischief instead of benefit may be the result. I have heard of a case where much irritation was caused by an awkward attempt to use a frigorific in cancer, which was more naturally than fairly attributed to the remedy instead of the faulty mode in which it had been applied. The truth being, that if congelation be effectually made, not only is there no irritation as a consequence, but the part is rendered, for a long time, incapable of this morbid condition.

It is of importance, particularly in the first application of congelation, to choose the most fitting time; and that will generally be when there is much pain present. As this will be completely relieved in a few minutes by a proper application of the frigorific, the patient is at once reconciled to the proceeding. The greatest difficulty which the practitioner will have to contend with in very advanced cases, is that indifference or apathy about remedies, and impatience of all constraint, which are caused by long suffering, despair of cure, and the

effects of an habitual use of opium. To conquer aversion to any such proceeding in these cases is, as experience has taught me, no easy task. Patients so worn with disease, and soured by disappointment with other measures, become hopeless of relief but from death. It is to be expected, however, that the early application of congelation will, ere long, be general in cancer ; and although there may be a difficulty in discriminating this from other affections of the womb in its earlier stage, it is of little importance, as congelation is, probably, the best remedy that can be used in the diseases with which it may be confounded. I have employed it with excellent effect in other affections of this organ not of a malignant character.* Similarly, if what are termed innocent tumours of the breast are congealed under the idea of their being malignant, their treatment by congelation, especially if compression be conjoined, will often be better and safer than any other that could be employed.

A speculum, or tube for introducing the frigorific, must be chosen appropriate to the case. The practitioner can himself easily make one of gutta percha, which, being a bad conductor of caloric, is well suited for the purpose. The wider the speculum, the more certainly, generally speaking, will due refrigeration be effected, both on account of the larger surface exposed to the frigorific, and the greater facility of applying it. There was under my care, three years ago, a case in which I deemed it necessary gradually to open the vagina by a fluid pressure dilator (an operation unattended with uneasiness on account of the equal nature of the distending pressure), to facilitate each introduction of a wide speculum. But a speculum constructed on the principle of some of those devised by the French, which expand more at their inner than their outer extremity after introduction, can be used under such circum-

* In this edition, a separate section is given to these.

stances. It has been ascertained, and it is a fortunate circumstance as respects any local application, that in by far the greater number of instances, cancer of the womb originates in, and is long confined to its cervix. "Its seat," says M. Lebert, "is so constantly in the neck, that in forty-five cases, we have only twice found it primitively in the body of the organ."*

It is especially of importance that the speculum should be one that may be passed easily, when it is introduced by the patient herself or by a nurse; and care must be taken, under these circumstances, that it shall not be pressed against the diseased organ, or otherwise excite irritation.

As one of the chief objections to its use would be removed by instructing nurses to introduce the speculum, it is singular that this should not be generally done. In the case of a lady affected with cancer of the uterus, lately under my care, whom circumstances prevented from remaining in town, the speculum was always passed by her daughter. And not only this, but owing to the difficulty of procuring ice in that part of the country where they lived, a sufficient quantity was artificially prepared on every occasion by the same young lady, by means of the ordinary freezing materials.†

After the speculum has been passed, the patient's body must be raised in order to give the instrument a due elevation. Instead of a hard pillow, a strong macintosh cushion may be conveniently used for this purpose, as it can easily be slipped under the patient, and afterwards distended, by means of a vulcanized tube, to the necessary degree. In certain cases, and

* *Traité Pratique des Maladies Cancéreuses.*

† While speaking of the speculum, I may take the opportunity of mentioning that I have found this instrument of the greatest service in introducing a plug in cases of uterine hæmorrhage. Without its aid as a conductor this proceeding is difficult from the pain which it causes, and is, consequently, often imperfect and useless.

especially when the frigorific is not powerful, it may be necessary to continue the application so long as would cause fatigue, but for this facility of altering the posture, or suspending for awhile the operation of the remedy.

The frigorific is now to be applied. That consisting of ice and chloride of sodium will generally be the best if properly prepared. When a more intense cold is required, I have usually added nitrate of ammonia to the other materials. For the preparation of frigorific mixtures, I must refer to the Essay already noticed on 'Benumbing Cold,' and to Mr Walker's communications on the subject, in the 78th and 85th vols. of the 'Philosophical Transactions.' During the application, the syphon already described is used to draw off the melted ice and salt, or a large elastic bag and pipe may be substituted. If a stop-cock and caoutchouc tube intervene between the bag and pipe, the practitioner can, with very little trouble, remove the brine at short intervals. The proceeding is concluded by washing away any remaining salt by a stream of iced water, or by repeated injections of this from the elastic bag. There may be an advantage in preventing the too rapid return of the natural temperature, by continuing for a few minutes a moderate degree of cold, but no necessity exists for any such precaution in order to prevent a sensation of smarting, for it rarely happens that pain is caused by frigorific applications to the womb ; and when there is much sensation of cold, it generally proceeds from the more sensitive vagina being refrigerated in consequence of an unnecessarily large quantity of mixture having been put into the speculum.

A modification of the fluid dilator is the best expedient for suppressing the dangerous hæmorrhage to which persons affected with uterine cancer, especially of the encephaloid kind, are subject. When made of vulcanized India rubber, it is very durable ; and if filled through a long tube of the same material

by a screw syringe, the pressure can be controlled by the patient herself.*

Were it advisable to apply pressure to the womb in such cases, in conjunction with cold, it would be necessary to make provision that a current of cold water should pass through the instrument, on the principle adverted to when speaking of the use of this apparatus in cancer of the breast.

A similar instrument, combining the agency of cold and pressure, is well adapted for cancer or stricture of the rectum or œsophagus. When congelation is indicated, a properly adapted hollow metallic bougie, containing one of the more powerful frigorifics, must be substituted. An apparatus constructed upon the principle of either one or the other of these, should supersede the cold injections usually prescribed for internal hæmorrhoids, affections of the prostate gland, &c., which can rarely be of any service.

The proper degree and continuance of cold must, as has been already mentioned, vary according to circumstances. Although a minor degree may be sufficient to relieve and fulfil all the other purposes of a palliative, a higher degree must be employed with a view to the cure of the disease, or even to afford relief of long duration. The relation between this remedy and various forms of inflammation may, to a certain extent, illustrate its action in cancer. If congelation, of a certain degree or duration only, be used in erysipelas, in ophthalmia, or in the inflammation of the mouth that is produced by mercury, it arrests the morbid action and relieves the attendant pain; but after awhile the disease returns, and the remedy must be re-applied. If, on the other hand, the temperature employed be lower, or longer continued, the inflammation will

* For an account of the construction and use of fluid dilators of equable pressure, I refer to my 'Treatise on Stricture of the Urethra and other Canals.'

be at once and permanently removed by it. It is probable, as has been remarked by M. Lebert, that a continued stream of iced water, running from a reservoir through a small flexible tube into the vagina, might soon relieve the pain in uterine cancer, but no lasting relief or permanent advantage could be hoped for from such a measure.

It is a satisfactory circumstance in connection with the treatment of uterine cancer, that the disease rarely extends from this organ to other parts of the system. Among thirty-seven females cut off by cancer in the womb, and examined by M. Ferrus ('Gazette Medicale de Paris,' July, 1830), seven only exhibited secondary cancer elsewhere. Another peculiarity, dependent probably upon the same unknown cause, is that cancer of the womb should, in cases to which the operation is applicable, have been more successfully treated by amputation than cancer occurring in any other locality. The misfortune is, that the cases are rare in which this operation can be resorted to. If the womb be forcibly dragged out before the excision is made, or extirpated while in its ordinary situation, death (as ample experience has shown) is almost the inevitable and immediate consequence. Yet, when we consider that a womb which has become prolapsed from natural causes may be removed with very little danger (and this has been attested by numerous examples), it becomes an interesting question, whether, in the early stages, and before the disease has extended to the contiguous organs, it might not, supposing all other curative means should fail, be very gradually, and without irritation, brought by art into the same favourable position. If natural prolapsus of the womb mainly proceed, as is commonly supposed, from relaxation of the vagina and the adjoining parts, the relaxation required to produce artificial prolapsus could be probably effected by the occasional use of such a fluid pressure dilator as I have on

another occasion suggested (and which I have myself employed), as a substitute for the forceps, or for excitants of uterine contraction, in cases where the birth of the child has been opposed by one of the most common causes of protracted labour—the unyielding of the external parts.

Some of these remarks may appear to the reader to relate to circumstances of little importance, and he may suppose that the procedure of congealing the neck of the womb in cancer may be very successfully accomplished without attention to such minutiae. In thinking so, he would be deceived. As I have already said, this is a nice operation, requiring for its due performance an attention to many particulars ; and it were better that it should not be attempted, than that it should be performed negligently. If the patient do not speedily obtain ease from her sufferings, or be otherwise sensible of benefit, she will be unwilling to continue the practice, and the omission of any one of twenty apparently little circumstances may cause a failure. As an illustration of how little this is generally understood, I may mention that I received, some time ago, a letter from an eminent practitioner, expressing the opinion that it must be difficult to congeal the neck of the womb, because an ordinary-sized speculum would not admit the passage of a large metallic ball. The application of a solid brass ball, which has been immersed in a freezing mixture, is a convenient mode of congealing small portions of the skin for anæsthetic purposes, or for the cure of eruptions, &c., but no mode of producing congelation can be less appropriate to the womb, or would more certainly fail. Others, according to information which I have received, have been unsuccessful, from neglecting to put the patient in a suitable position—from employing frigorifics of inadequate power, or not employing them properly—and, in several instances, from not being able (from their neglecting to adopt the assisting measures in

our possession) to introduce a proper-sized speculum, on account of the irritability of the parts.

In the treatment of uterine and other cancers, a combination of remedies is often required to fulfil different indications. The combination of pressure with congelation has already been adverted to as being often of great advantage in cancer wherever there is a resisting surface for counter-pressure. Not only does the pressure exercise its peculiar properties as respects the parasitic cells, but by reducing the bulk of the containing and contiguous parts, it very much facilitates the effective operation of intense cold. The regulation of the secretions and the improvement of the condition of the blood, are important objects of treatment in those cases particularly in which opiates have been long employed, or where the patient has suffered from hæmorrhage.

Before concluding the subject of congelation as a remedy of cancer, I must correct an erroneous impression which some appear to be under respecting the use of this agent. Admitting its superiority as a means of relieving pain, they do not seem to attach due importance to its power of arresting the malady and indefinitely prolonging life. The following extract, for example, from a report of a case in the Middlesex Hospital (*Lancet*, March 20th, 1852), would indicate that the writer of it is under this impression. "The breast was attacked only one year ago. The disease has however made such rapid progress that the scirrhus tumour is now deeply ulcerated, and at times extremely painful. It appears that Dr James Arnott's plan of producing insensibility was tried in this case, in order to allay the agonizing pain which the poor woman was suffering. The patient was so much relieved by the proceeding that she soon afterwards requested to have it repeated, and she expresses herself as very grateful for the temporary removal of

the severe pain she experiences. Dr Tyler Smith likewise succeeded some time ago at St Mary's Hospital in thus relieving excruciating pain in a case of cancer of the uterus."

Now, valuable as the quality is which congelation possesses of assuaging pain more effectually than opium or the other narcotics, and without their evil effects on the constitution, this is of very inferior importance to its power of arresting, if not curing, the disease. If it be supposed that the power of removing inflammation and pain is all that is to be expected from this agent, the surgeon will cease its employment as soon as these ends are accomplished, and consequently fail in accomplishing its chief purpose.

It is proper also that I should take this opportunity of noticing a proposal by M. Velpeau, to prolong the application of congelation in cancer, in order to destroy the tumour, in lieu of caustic. It is unnecessary to remark that this use of intense cold differs as much from the mode in which I have employed it, as the latter does from excision. This is not, however, as has been erroneously supposed, the sole purpose for which M. Velpeau would employ congelation in this disease; and in my own opinion, if I may venture to speak of a practice of which I have no experience, it is far from being a commendable use of it. I can only attribute M. Velpeau's suggestion of using congelation for such a purpose to the confidence which, beyond all other modern surgeons of celebrity, he places in ablation as a cure of cancer, by whatever means effected.*

* In a review, by Mr Birkett, of M. Velpeau's work on Diseases of the Breast, in the last No. of the 'Medico-Chirurgical British and Foreign Review,' there is an inaccurate representation of his opinions on the employment of congelation in cancer. Mr Birkett condenses these into the two following sentences, which are translations of two passages widely detached from each other in the original. "Congelation, by means of the application of pounded ice and salt, has, according to M.

Velpeau, certain advantages, which may be regarded as palliative, if not, even in some cases, as a means of cure. And although the author has little experience in its application, the effects which he has seen produced would induce him to employ the frigorific mixture, before entirely rejecting it, especially as a succedaneum to (for) caustics." By the juxtaposition of the sentences, M. Velpeau is made to appear strangely inconsistent in speaking of "entirely rejecting" a means acknowledged by him, not only to be useful as a palliative, but, in certain cases, as a cure. The fact is, however, that the second sentence is not only unconnected with the first, having reference to another subject, but it is imperfectly translated. M. Velpeau, speaking of congelation as a substitute for caustics, which, he distinctly states, is not the only purpose it will serve in the disease, says, "although I have used it in cancers but a few times, the effects which I have obtained, nevertheless, lead me to think that we should not be justified in rejecting without examining it." In my own opinion, its employment for the purpose alluded to ought to be rejected. To the just appreciation by this very eminent Surgeon of the value of congelation on other occasions, its speedy adoption by practitioners on the continent is mainly due; but, although he has perceived some of its advantages in cancer, it is evident that he is imperfectly acquainted with the proper mode and intention of using it in that disease.

A P P E N D I X.

On the Treatment of Inflammatory and Ulcerative Diseases of the Neck of the Uterus by Congelation or Intense Cold.

IT is now a generally recognised fact, that inflammation of the uterus and its consequences are much more frequent occurrences than, a very few years ago, with our then imperfect means of detecting them, had been supposed ; and although many of these affections are little more than inconveniences, or the sources of continued annoyance and suffering to the patients ; others, by the debility which they cause, are the sources of diseases that eventually prove fatal. In rarer instances they themselves may prove more directly the cause of death.

Our present advanced knowledge of the diseases of the neck of the womb, is mainly to be attributed to the revival of the speculum by Recamier, and the subject has, of late years, particularly, been investigated both by French and British practitioners with so much zeal, that there is probably little of importance connected with the symptoms, particular seats, and nature of these uterine affections that has escaped detection ; indeed, it may be said that the attempt at discrimination has gone too far, and that distinctions have been made where there

is scarcely a difference. There can hardly be a doubt, that too great importance has been attached to slight variations in the seat and stage of the inflammatory affection, and that the time and study spent in making these, would have been more profitably engaged in supplying an improved method of treatment. What was wanted was a means of reducing persisting inflammation and its consequences, without the risk of producing more mischief than the disease itself; and of causing this reduction quickly, for there are peculiar reasons, relating both to the moral and physical nature of the patient, why it is highly desirable that the cure, provided it can be accomplished with equal safety, should be as rapidly made as possible.

Although much may be done by attention to the general health, the chief reliance in obstinate disease of this kind attacking the womb, has been principally upon local bleeding, where acute inflammation exists, and the stronger astringents and caustics, where it has become chronic, or where greater organic disease has ensued. The nitrate of silver and caustic potass, are the caustics mostly used; and though these are often successful, it cannot be denied that their use is not only a slow process, but that the employment of the latter is attended with very considerable hazard.

At a very early period of my use of congelation as a remedy, I employed it in cases of irritable ulcer occurring on the surface of the body, and always with the most marked success. Indeed, one thorough application rarely failed to convert an irritable into a healing ulcer; and the patient was thus saved all the annoyance and confinement which are usually experienced in such cases, from a tedious medication of weeks if not of months. As the beneficial effect of congelation in other cutaneous inflammatory affections was not less remarkable, I had not long employed it in cancer of the womb, and become familiar with its application to that organ, before using it

in its other affections ; and the Brighton Dispensary, of which I was then physician, furnished ample opportunity for observation. I was soon convinced that its speedy remedial efficacy is not less certain in diseases of the mucous, than in those of the cutaneous tissue; and the only disadvantage attending its use in similar affections of the skin, that it is sometimes painful, does not apply to the comparatively insensible mucous membrane. If it be properly used in uterine disease, it is never complained of.

It is not my purpose, on the present occasion, to do more than point out this valuable anti-phlogistic to the practitioner; assuring him that there are few diseases affecting the womb, or contiguous mucous membrane, of which inflammation is an element, that will not speedily yield to it, and none in which it will be hurtful. For congelation is entitled to this especial recommendation, that, contrary to most other remedies, which are hazardous in proportion to their power, if it does no good, it does no harm. It does not, like caustic, destroy the part to which it is applied ; it only arrests its inflammation by altering the tonicity of the blood-vessels, and reducing the excitement of the nerves. Where mere excitement or irritation may be supposed the cause of disease, its beneficial effects are equally conspicuous. Last winter I used repeated congelation, and with complete success, in the case of a lady who had been reduced to extreme weakness by periodical uterine hæmorrhage unconnected with organic disease, that had long resisted all the ordinary remedies. Nor are its powers limited to the reduction of inflammation. By its control over the formative cells, and its permanent effect on the vessels and nerves, it possesses an alterative power which in cases of hypertrophy, or tendency to morbid growths, may be of the highest importance. But should a great change of structure resist its power, and render the application of one of the severer caustics necessary, intense

cold will still be useful, both to obviate pain from the cauterization, and as a preventive of reactive inflammation. For, this inflammation extending to the peritoneum, is, too frequently, a fatal consequence of severe caustic applications, and other operations on the womb.

I have much satisfaction in corroborating these opinions by a reference to the high estimate expressed of the use of "a frigorific mixture of ice and salt, producing a temperature of about 20° below zero, C, in inflammation of the uterine mucous membrane, granulations, and erosions of the cervix," by a distinguished writer on these affections, M. Aran, Physician to the Hôpital Saint Antoine in Paris. It is appended to a report in the 'Gazette des Hôpitaux,' Nov. 16th, of the successful use of congelation in a case of acute and widely-spread eczema, for which all the usual remedies had been tried in vain.

MEDICAL WORKS BY THE SAME AUTHOR.

On the LOCAL APPLICATION of a BENUMBING or CONGEALING TEMPERATURE in INFLAMMATORY, PAINFUL and MALIGNANT DISEASES.

"This small but able volume we commend most strongly to the notice of our readers. Some of Dr Arnott's valuable contributions to therapeutics we have on previous occasions noticed in terms of high commendation in the pages of our journal, and the present, on the employment of benumbing cold in the treatment of disease, we consider as extremely valuable; we have ourselves tested its application, with the most complete success, in some cases."—*Dublin Quarterly Journal of Medical Science*, February, 1853.

The QUESTION CONSIDERED: Is it justifiable to administer Chloroform in Surgery, after its having already proved fatal in upwards of fifty cases, when pain can be safely prevented, without loss of consciousness, by momentary benumbing cold?

"We look upon the present work as a valuable gift to the operating Surgeon."—*Lancet*, January 13, 1855.

On INDIGESTION: its Pathology, and Treatment by the local application of uniform and continuous heat and moisture. With an account of an improved mode of applying heat or cold in pulmonary consumption, bronchitis, ulcers, and other diseases.

"We have long been of opinion, in common we doubt not with many of our readers, that too little use has been made of heat and cold as therapeutic agents. We are extremely glad that Dr James Arnott, to whom we are indebted for the suggestion of many improved modes of practice in which physical agents are available, has turned his attention to the subject, and has devised a simple apparatus by which the dose of temperature may be exactly regulated, and its efficient application readily secured for such a period as may be desired. . . . We earnestly hope that Dr Arnott's valuable suggestion may be generally acted on."—*British and Foreign Medico-Chirurgical Review* for April, 1848.

"Although heat and cold are universally acknowledged to be therapeutic agents of great power in the treatment of disease, there are none which are so inefficiently made use of in general practice. . . . We warmly recommend the adoption of Dr Arnott's apparatus. The profession and the public are deeply indebted to him."—*Edinburgh Monthly Journal of Medical Science* for May, 1848.

On the PRESENT STATE of THERAPEUTICAL ENQUIRY. With an Appendix containing the application of several novel suggestions to Midwifery.

" . . . In his little book the practitioner will find a closely-packed repository of useful inventions. Many of these are eminently ingenious, and based on sound principles."—*British and Foreign Medical Review*, April, 1846.

"For an account of Dr Arnott's numerous suggestions and inventions with a view to the more successful treatment of disease, we would refer to his admirable little Essay on Therapeutical Enquiry."—*Dublin Quarterly Journal of Medical Science*, August, 1848.